

(f) The diverter sealing element and diverter valves shall be pressure tested to a minimum of 200 psi when nipped up on conductor casing with a surface wellhead configuration. No more than 7 days shall elapse between subsequent similar pressure tests. For surface and subsea wellhead configurations, the diverter sealing element, diverter valves, and diverter-control systems, including the remote control system, shall be actuation-tested and the vent lines flow tested when first installed. Subsequent actuation tests shall be conducted not less than once every 24-hour period thereafter alternating between control stations. All pressure test, flow test, and actuation results shall be recorded in the driller's report.

(g) Diverter systems and components for use in subfreezing conditions shall be suitable for use under these conditions.

§ 250.410 Mud program.

(a) *General requirements.* The quantities, characteristics, use, and testing of drilling mud and the related drilling procedures shall be designed and implemented to prevent the loss of well control.

(b) *Mud control.* (1) Before starting out of the hole with drill pipe, the mud shall be properly conditioned by circulation with the drill pipe just off bottom to the extent that a volume of drilling mud equal to the annular volume is displaced. This procedure may be omitted if proper documentation in the driller's report shows the following:

(i) There is no indication of influx of formation fluids prior to starting to pull the drill pipe from the hole.

(ii) The weight of the returning mud is essentially the same as the weight of the mud entering the hole. In the event that the returning mud is lighter than the entering mud by a weight differential equal to or greater than 0.2 pounds per gallon (1.5 pounds per cubic foot), the mud shall be circulated until a volume of drilling mud equal to the annular volume is displaced, and the mud properties measured to assure that there has been no influx of gas or liquid.

(iii) Other mud properties recorded on the daily drilling log are within the

limits established by the approved mud program.

(2) When mud in the hole is circulated, the driller's report shall be so noted.

(3) When coming out of the hole with drill pipe, the annulus shall be filled with mud before the change in mud level decreases the hydrostatic pressure by 75 psi, or every five stands of drill pipe, whichever gives a lower decrease in hydrostatic pressure. The number of stands of drill pipe and drill collars that may be pulled prior to filling the hole and the equivalent mud volume shall be calculated and posted near the driller's station. A mechanical, volumetric, or electronic device for measuring the amount of mud required to fill the hole shall be utilized.

(4) Drill pipe and downhole tool running and pulling speeds shall be at controlled rates so as not to induce an influx of formation fluids from the effects of swabbing nor cause a loss of drilling fluid and corresponding hydrostatic pressure decrease from the effects of surging.

(5) When there is an indication of swabbing or influx of formation fluids, the safety devices and measures necessary to control the well shall be employed. The mud shall be circulated and conditioned, on or near bottom, unless well or mud conditions prevent running the drill pipe back to the bottom.

(6) For each casing string, the maximum pressure to be contained under the BOP shall be posted near the driller's station.

(7) In areas where permafrost and/or hydrate zones may be present or are known to be present, drilling fluid temperatures shall be controlled or other measures taken to drill safely through those zones.

(8) An operable mud-gas separator and operable degasser shall be installed in the mud system prior to commencement of drilling operations and shall be maintained for use throughout the drilling of the well.

(9) The mud in the hole shall be circulated or reverse-circulated prior to pulling the drill-stem test tools from the hole. If circulating out test fluid is not feasible, test fluids may be bullheaded out of the drill-stem test string

and tools with an appropriate kill fluid prior to pulling the test tools.

(c) *Mud-testing and monitoring equipment.* (1) Mud-testing equipment shall be maintained on the drilling rig at all times, and mud tests shall be performed once each tour, or more frequently, as conditions warrant. Such tests shall be conducted in accordance with industry-accepted practices and shall include mud density, viscosity, and gel strength, hydrogen-ion concentration (pH), filtration, and other tests as may be deemed necessary by the District Supervisor in the interests of monitoring and maintaining mud quality for safe operations, prevention of downhole equipment problems, and for kick detection. The results of these tests shall be recorded in the driller's report.

(2) The following mud-system monitoring equipment shall be installed with derrick floor indicators and used when mud returns are established and throughout subsequent drilling operations:

(i) Recording mud-pit level indicator to determine mud-pit volume gains and losses. This indicator shall include both a visual and an audible warning device.

(ii) Mud-volume measuring device to accurately determine mud volumes required to fill the hole on trips.

(iii) Mud-return indicator devices which indicate the relationship between mud-return flow rate and pump discharge rate. This indicator shall include both a visual and an audible warning device.

(iv) Gas-detecting equipment to monitor the drilling mud returns with indicators located in the mud-logging compartment or on the rig floor. If the indicators are only in the mud-logging compartment, there shall be a means of immediate communication with the rig floor, and the gas-detecting equipment shall be continually manned. If the indicators are on the rig floor only, an audible alarm shall be installed.

(d) *Mud quantities.* (1) Quantities of mud and mud materials at the drill site shall be utilized, maintained, and replenished as necessary to ensure well control. Those quantities shall be based on known or anticipated drilling conditions to be encountered, rig stor-

age capacity, weather conditions, and estimated time for delivery.

(2) Daily inventories of mud and mud materials including weight materials and additives at the drill site shall be recorded and those records maintained at the well site.

(3) Drilling operations shall be suspended in the absence of sufficient quantities of mud and mud materials to maintain well control.

(e) *Safety precautions in mud-handling areas.* Mud-handling areas which are classified as per API RP 500 or API RP 505 where dangerous concentrations of combustible gas may accumulate shall be equipped with ventilation systems and gas monitors as described below no later than May 31, 1989. Regulatory requirements in effect on April 1, 1988 are applicable until May 31, 1989.

(1) Be ventilated with high-capacity mechanical ventilation systems capable of replacing the air once every 5 minutes or 1.0 cubic feet of air-volume flow per minute per square foot of area, whichever is greater, unless such ventilation is provided by natural means. If not continuously activated, mechanical ventilation systems shall be activated on signal from gas detectors that are operational at all times indicating the presence of 1 percent or more of gas by volume.

(2) Be maintained at a negative pressure relative to an adjacent area if mechanical ventilation is installed to meet the requirements in paragraph (e)(1) of this section and discharges may be hazardous. The negative pressure areas shall be protected with at least one of the following: (i) A pressure-sensitive alarm, (ii) open-door alarms on each access to the area, (iii) automatic door-closing devices, (iv) air locks, or (v) other devices as approved by the District Supervisor.

(3) Be fitted with gas detectors and alarms except in open areas where adequate ventilation is provided by natural means.

(4) Be equipped with either explosion-proof or pressurized electrical equipment to prevent the ignition of explosive gases. Where air is used for pressuring, the air intake shall be located outside of, and as far as practicable from, hazardous areas.

(5) Mechanical ventilation systems shall be fitted with alarms which are activated upon a failure of the system.

(6) Gas detection systems shall be tested for operation and recalibrated at a frequency such that no more than 90 days shall elapse between tests.

[53 FR 10690, Apr. 1, 1988, as amended at 55 FR 47752, Nov. 15, 1990. Redesignated at 63 FR 29479, May 29, 1998, as amended at 65 FR 40052, June 29, 2000]

§ 250.411 Securing of wells.

A downhole safety device such as a cement plug, bridge plug, or packer shall be timely installed when drilling operations are interrupted by events such as those which force evacuation of the drilling crew, prevent station keeping, or require repairs to major drilling or well-control equipment. In floating drilling operations, the use of blind-shear rams or pipe rams and an inside BOP may be approved by the District Supervisor in lieu of the above requirements if supported by evidence of special circumstances and/or the lack of sufficient time.

§ 250.412 Field drilling rules.

When geological and engineering information available in a field enables a District Supervisor to determine specific operating requirements appropriate to wells to be drilled in the field, field drilling rules may be established on the initiative of the District Supervisor, or in response to a request from a lessee. Such rules may modify the requirements of this subpart. After field drilling rules have been established, development wells to which such rules apply shall be drilled in accordance with such rules and other requirements of this subpart. Field drilling rules may be amended or cancelled for cause at any time upon the initiative of the District Supervisor or upon the approval of a request by a lessee.

§ 250.413 Supervision, surveillance, and training.

(a) The lessee shall provide onsite supervision of drilling operations on a 24-hour per day basis.

(b) From the time drilling operations are initiated and until the well is completed or abandoned, a member of the drilling crew or the toolpusher shall

maintain rig-floor surveillance continuously, unless the well is secured with BOP's, bridge plugs, packers, or cement plugs.

(c) Lessee and drilling contractor personnel must be trained and qualified according to Subpart O of this part. Records of specific training which lessee and drilling contractor personnel have successfully completed, the dates of completion, and the names and dates of the courses shall be maintained at the drill site.

[53 FR 10690, Apr. 1, 1988. Redesignated at 63 FR 29479, May 29, 1998; 64 FR 9065, Feb. 24, 1999]

§ 250.414 Applications for permit to drill.

(a) Prior to commencing the drilling of a well under an approved Exploration Plan, Development and Production Plan, or Development Operations Coordination Document, the lessee shall file a Form MMS-123, APD, with the District Supervisor for approval. Prior to commencing operations, written approval from the District Supervisor must be received by the lessee unless oral approval has been given pursuant to § 250.140.

(b) The APD's for wells to be drilled from mobile drilling units shall include the following:

(1) An identification of the maximum environmental and operational conditions the rig is designed to withstand.

(2) Applicable current documentation of operational limitations imposed by the American Bureau of Shipping classification or other appropriate classification society and either a U.S. Coast Guard Certificate of Inspection or a U.S. Coast Guard Letter of Compliance.

(3) For frontier areas, the design and operating limitations beyond which suspension, curtailment, or modification of drilling or rig operations are required (e.g., vessel motion, offset, riser angle, anchor tensions, wind speed, wave height, currents, icing or ice-loading, settling, tilt or lateral movement, resupply capability) and the contingency plans which identify actions to be taken prior to exceeding the design or operating limitations of the rig.

(4) A program which provides for safety in drilling operations where a floating or semisubmersible type of